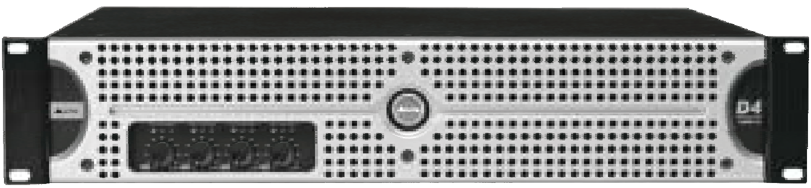
OWNER'S MANUAL

D1/D2/D3/D4

PROFESSIONAL POWER AMPLIFIERS



www.altoproaudio.com

Version 1.3 SEPTEMBER 2007

English

IMPORTANT SAFETY INSTRUCTION



TO REDUCE THE RISK OF ELECTRIC SHOCK PLEASE DO NOT REMOVE THE COVER OR THE BACK PANEL OF THIS EQUIPMENT. THERE ARE NO PARTS NEEDED BY USER INSIDE THE EQUIPMENT. FOR SERVICE, PLEASE CONTACT QUALIFIED SERVICE CENTERS.

This symbol, wherever used, alerts you to the presence of un-insulated and dangerous voltages within the product enclosure. These are voltages that may be sufficient to constitute the risk of electric shock or death.

This symbol, wherever used, alerts you to important operating and maintenance instructions. Please read.

⏚ Protective Ground Terminal
~ AC mains (Alternating Current)
ϟ Hazardous Live Terminal
ON: Denotes the product is turned on.
OFF: Denotes the product is turned off.

CAUTION
Describes precautions that should be observed to prevent damage to the product.

1. Read this Manual carefully before operation.
2. Keep this Manual in a safe place.
3. Be aware of all warnings reported with this symbol.



4. Keep this Equipment away from water and moisture.
5. Clean it only with dry cloth. Do not use solvent or other chemicals.
6. Do not damp or cover any cooling opening. Install the equipment only in accordance with the Manufacturer's instructions.
7. Power Cords are designed for your safety. Do not remove Ground connections! If the plug does not fit your AC outlet, seek advice from a qualified electrician. Protect the power cord and plug from any physical stress to avoid risk of electric shock. Do not place heavy objects on the power cord. This could cause electric shock or fire.
8. Unplug this equipment when unused for long periods of time or during a storm.
9. Refer all service to qualified service personnel only. Do not perform any servicing other than those instructions contained within the User's Manual.
10. To prevent fire and damage to the product, use only the recommended fuse type as indicated in this manual. Do not short-circuit the fuse holder. Before replacing the fuse, make sure that the product is OFF and disconnected from the AC outlet.

WARNING

To reduce the risk of electric shock and fire, do not expose this equipment to moisture or rain.



Dispose of this product should not be placed in municipal waste and should be separate collection.

11. Move this Equipment only with a cart, stand, tripod, or bracket, specified by the manufacturer, or sold with the Equipment. When a cart is used, use caution when moving the cart / equipment combination to avoid possible injury from tip-over.



12. Permanent hearing loss may be caused by exposure to \ extremely high noise levels. The US. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible exposure to noise level.
These are shown in the following chart:

HOURS X DAY	SPL	EXAMPLE
8	90	Small gig
6	92	train
4	95	Subway train
3	97	High level desktop monitors
2	100	Classic music concert
1,5	102	
1	105	
0,5	110	
0,25 or less	115	Rock concert

According to OSHA, an exposure to high SPL in excess of these limits may result in the loss of heat. To avoid the potential damage of heat, it is recommended that Personnel exposed to equipment capable of generating high SPL use hearing protection while such equipment is under operation.

The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

The mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

IN THIS MANUAL:

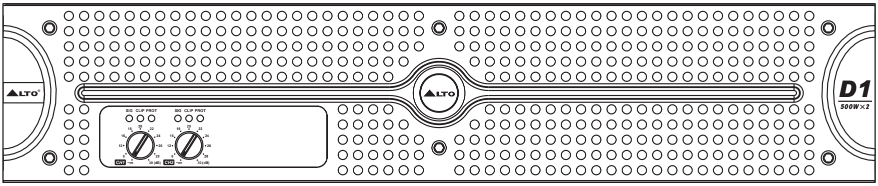
1. INTRODUCTION

Thank you for expressing your confidence in ▲LTO products by purchasing one or more of our D series power amplifiers. The D range includes D1, D2, D3 and D4. There are 2 channels for the D1/D3, and 4 channels for D2/D4. All models are rugged, 2 rack-unit amplifiers fan-cooled. They provide a lot of power and a high value performance. They are all designed for heavy-duty application and they all can drive 4 ohm loads for long periods without overheating. Therefore they are suited to drive subwoofers with a minimum load of 8 ohm when working in Bridge Mode.

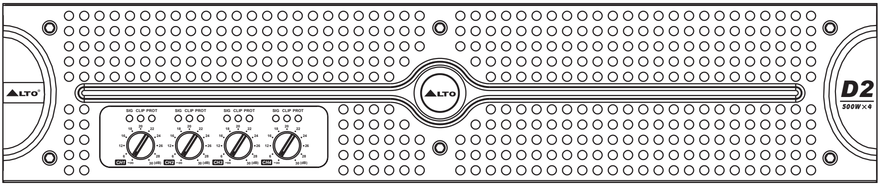
Enjoy your D amplifier and make sure to read this manual carefully before operation!

2. FEATURES

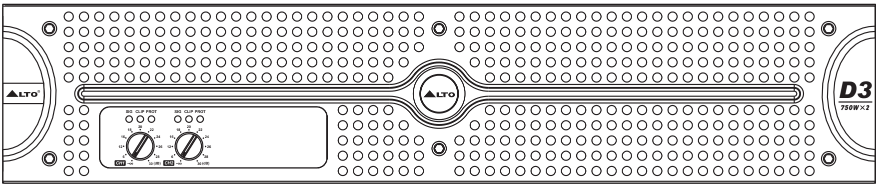
▲ Illuminated Power Switch
▲ Automatic Clip-limiter circuit
▲ Switchable low-frequency filter at 30 Hz
▲ Operating Mode is: Stereo, Parallel or Bridge
▲ Balanced Combo input connectors
▲ Output connectors are speak-on jacks and binding post terminals
▲ Low-noise, variable speed fan
▲ Front panel LED indicating Signal and Clipping and Protection Status
▲ Class D technology, switch power, light weight and high power
▲ Manufactured under TS16949, ISO14001 certified management system


SIG CLIP PROT
SIG CLIP PROT
CH1
CH2
D1
500W×2

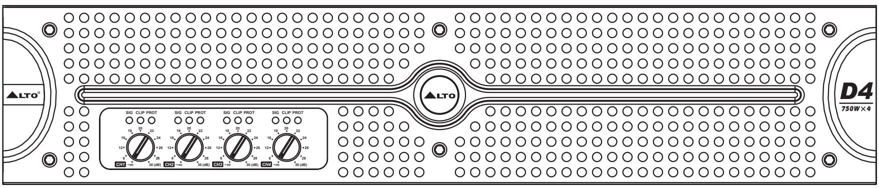
D1


SIG CLIP PROT
SIG CLIP PROT
SIG CLIP PROT
SIG CLIP PROT
CH1
CH2
CH3
CH4
D2
500W×4

D2

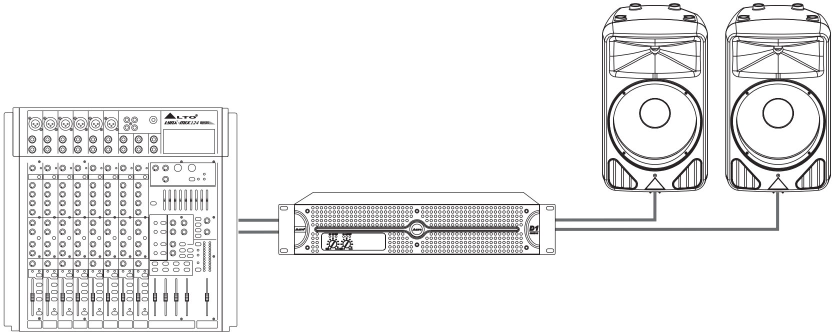

SIG CLIP PROT
SIG CLIP PROT
CH1
CH2
D3
750W×2

D3


SIG CLIP PROT
SIG CLIP PROT
SIG CLIP PROT
SIG CLIP PROT
CH1
CH2
CH3
CH4
D4
750W×4

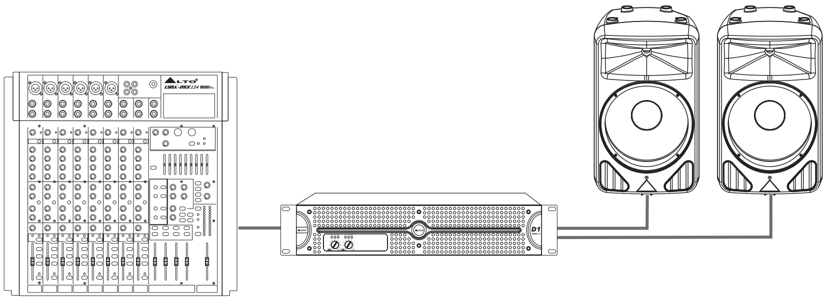
D4

STEREO MODE



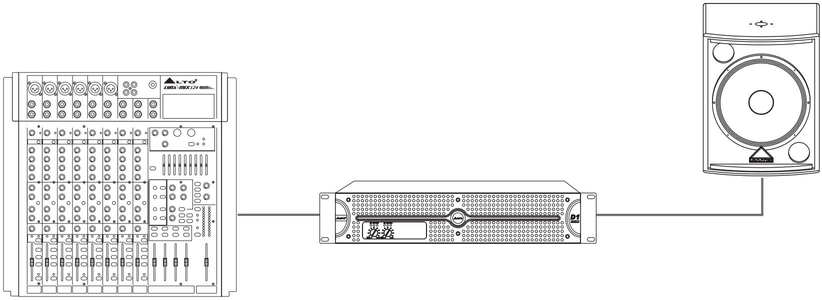
In this mode 2 independent channels are sent to 2 separate speakers.

PARALLEL MODE



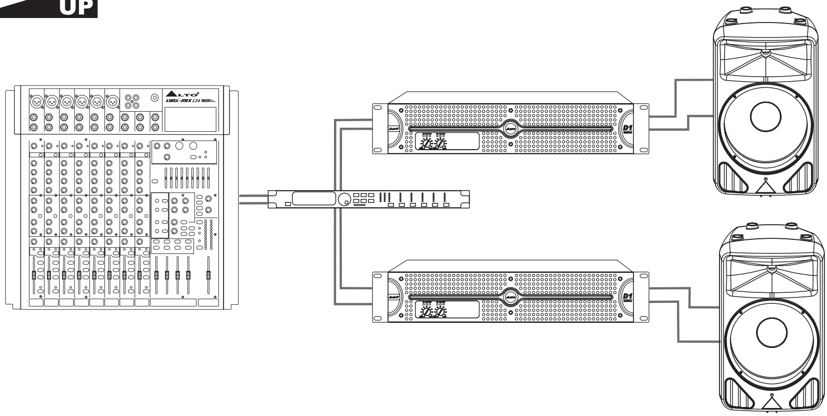
One mono signal is input to CH A or CH B of the D series amplifier and then output to 2 separate speakers. Each speaker volume can be set separately.

BRIDGE MODE



The stereo or mono signal input to CH A and CH B is combined on the BRIDGE MONO connector. Only CH A Gain control is active. The power at the output will be combined power of the two channels.

STEREO BIAMP



This application is only for D1 or D3. For the D2 or D4, it has four channels so only use one amplifier. The Main Mix signal is routed into an electronic crossover. CH A drives the woofer and CH B drives the high frequency driver in a 2-way enclosure.

3. CONTROL ELEMENTS

Front Panel:

1 POWER SWITCH & INDICATOR LED

It powers the D amplifier ON and OFF. When the D amplifier is turned on the power switch illuminates blue.

2 SIGNAL LED

This LED will light up green when the signal at the output is at least -20 dB.

3 CLIP LED

This LED will flash when distortion reaches a level of 0.5%, Turn the relative GAIN control down so that the CLIP LEDs only flash occasionally.

4 PROTECTION LED

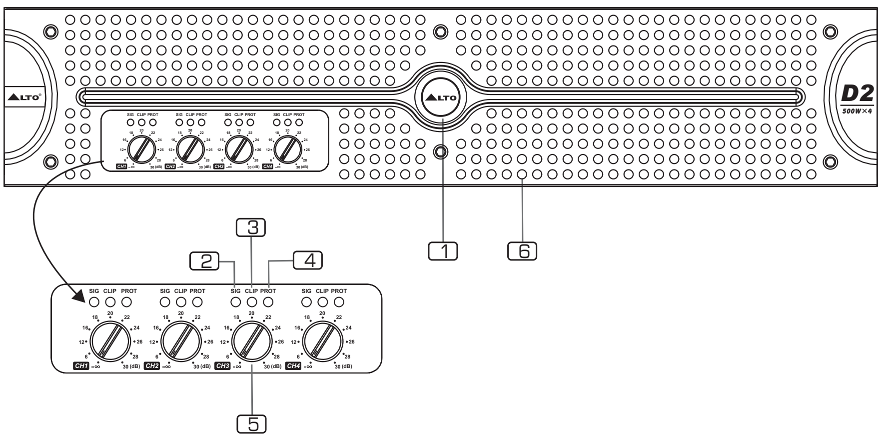
It will light up when the unit is in Protection Mode due to short circuit, low impedance load or other causes.

5 GAIN CONTROLS

These controls are used to adjust the output signal level.

6 COOLING VENTS

Allow air circulation from front to back of the amplifier.



3. CONTROL ELEMENTS

Rear Panel:

7 CIRCUIT BREAKER

This is an electronic fuse for protecting the unit from possible damage. When the unit is overloaded or the temperature inside the unit is too high, this push-type button will spring out and disconnect the power supply. Push the Breaker to restore normal working conditions.

8 IEC socket for AC power cable

Connect the supplied main cord. Do not insert the power cord into the D amplifier and into the AC Outlet until voltage has been correctly set.

9 COMBO BALANCED INPUT CONNECTORS

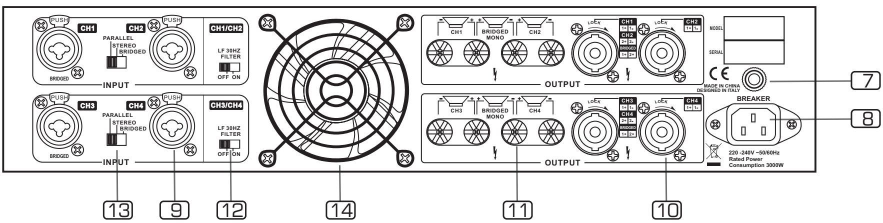
Each Channel features balanced combo connector that used to input the signal to the amplifier.

10 SPEAKON OUTPUTS

These connectors are specifically designed to connect high power speakers. The correct polarity is secured automatically, they prevent shock hazard and they lock-in securely.

11 BINDING POST OUTPUTS

Please make sure to respect the speaker polarity when using binding post.
Caution: Turn off the unit before connecting an audio signal to the binding post to avoid any electric shock!



3. CONTROL ELEMENTS

12 LOW FREQUENCY FILTER

This Filter rolls off audio signals below 30Hz. In this way bass performance will be improved, because the subsonic motion of the cone will be cut out and more power is made available to the woofer in the audible range of frequencies. If you want our view: Keep the Filter ON most of the time unless you are filtering the signal before the input of the amplifier. Especially vented speakers (bass-reflex) are very sensitive to subsonic frequencies (below 30Hz).

13 OUTPUT MODE SELECTOR

The D series power amplifier presents three operating modes:

- Stereo Mode

In this mode, CH A and CH B operate independently (as a normal stereo amplifier) The CH A input signal will be output from the CH A output connector, and CH B input signal will be output from the CH B output connector.

- Parallel Mono Mode

In this mode, CH A input signal will be output from the output connectors of both channels. Detail wiring diagram you can refer to chapter 4.

- Bridged Mode

In this mode, CH A input signal will be output from the bridge-mono output connector. Detail wiring diagram you can refer to chapter 4.

14 COOLING FAN

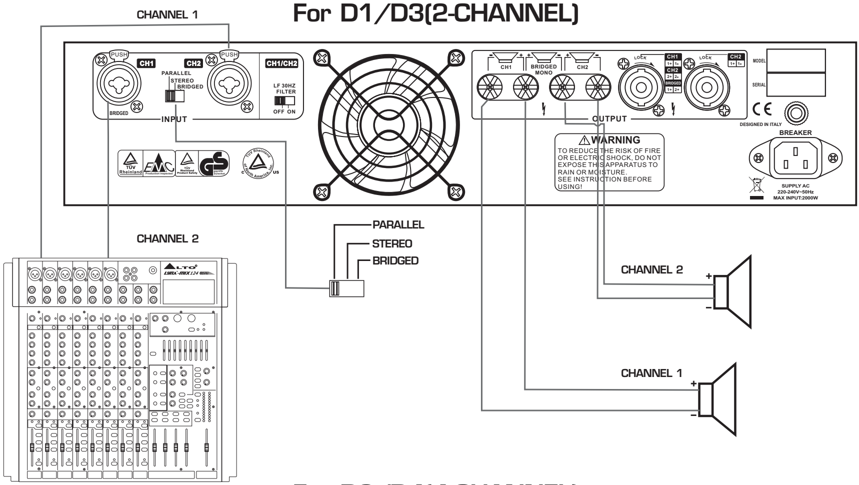
This fan secures enough cooling for your amplifier. The airflow is front-to-rear. The fan speed is electronically regulated depending on the temperature of the power devices.

4. OPERATION-In Stereo Mode

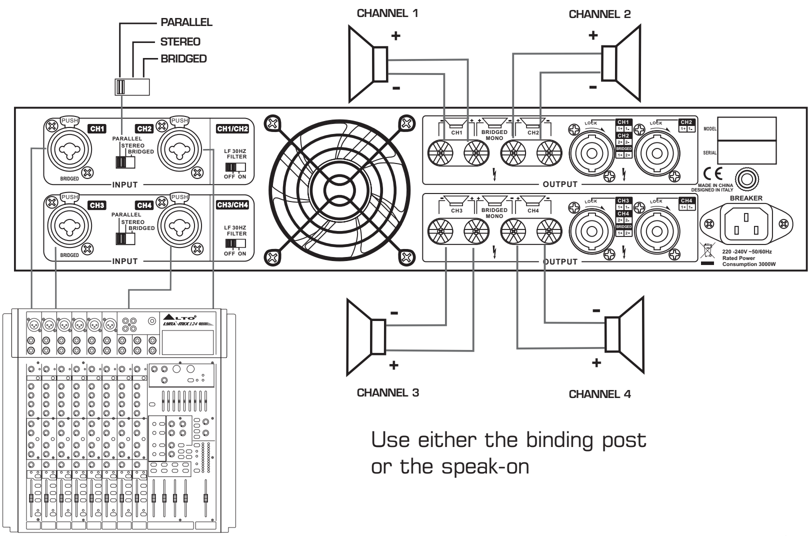
The D series power amplifiers provide three operating modes: stereo mode, parallel (mono) mode and bridged mode, you can decide each specific operating mode according to your actual application circumstance.

In this mode, channel A and channel B operate independently (as a conventional stereo amplifier). The channel A input signal will be output from the channel A output connectors, and the channel B input signal will be output from the channel B output connectors.

For D1/D3(2-CHANNEL)



For D2/D4(4-CHANNEL)



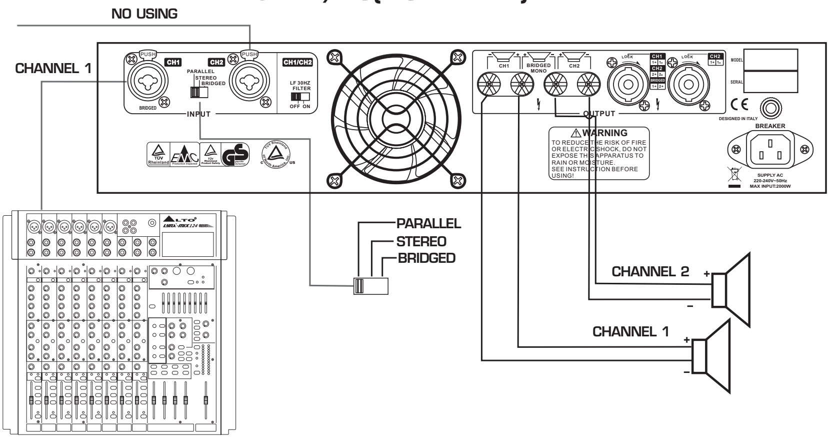
Use either the binding post or the speak-on

4. OPERATION-in Parallel Mode

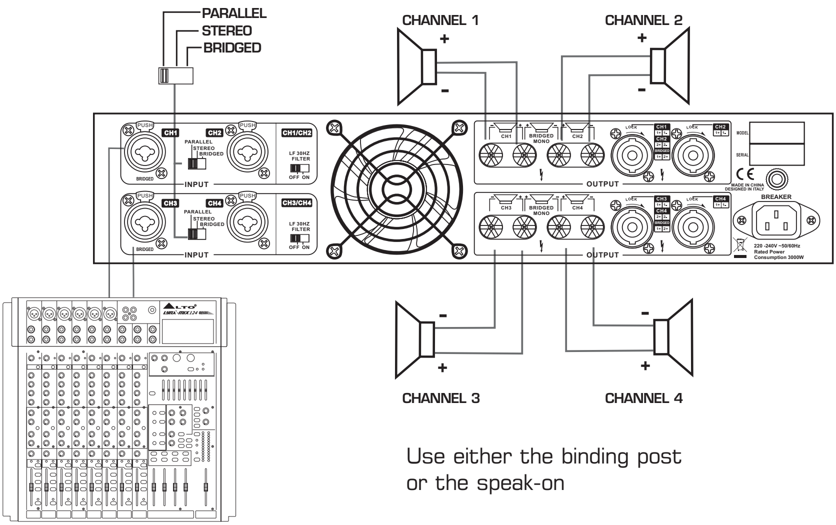
In this mode, the channel A input signal will be output from the output connectors of both channels. The channel B input jack is not used; the channel A and B volumes can be adjusted independently. Use the Parallel Mode when you want to drive two speakers with only one input signal keeping separate control of the volume of the two channels.

NOTE: since you are not using the channel B input you can use this socket to "daisy-chain" the signal to another amplifier.

For D1/D3(2-CHANNEL)



For D2/D4(4-CHANNEL)

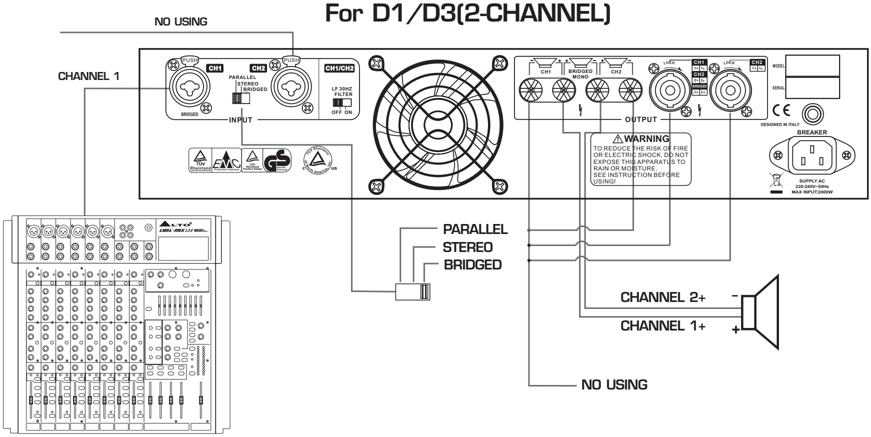


Use either the binding post or the speak-on

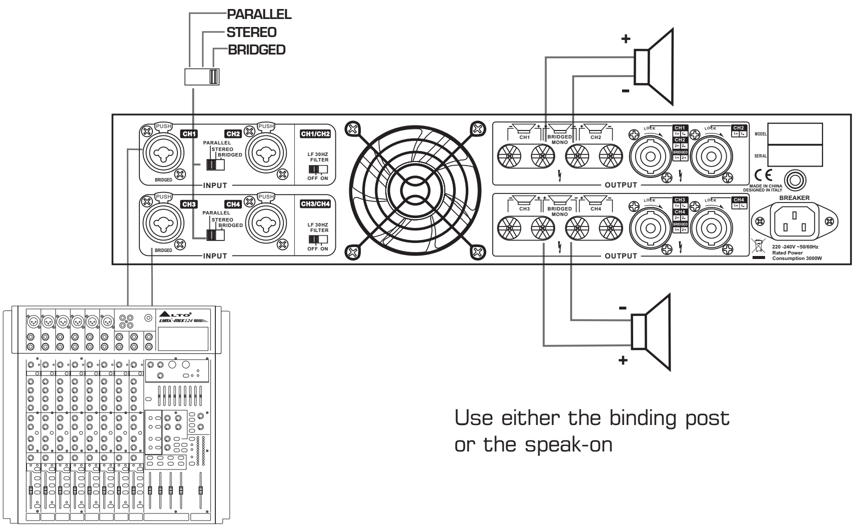
4. OPERATION-In Bridged Mode

In this mode, the channel A input signal will be output from the bridge output connectors. (The 2 RED binding post) In this case, use the channel A volume control to adjust the volume, keep the volume control of channel B turned completely down (counter clockwise). Bridged mode is intended for driving loads with a total impedance of 8 ohms or greater. In Bridge Mode you will combine the power of both channels into one speaker. You will have available massive amount of power so check carefully the power handling of your speaker before operation.

For D1/D3(2-CHANNEL)

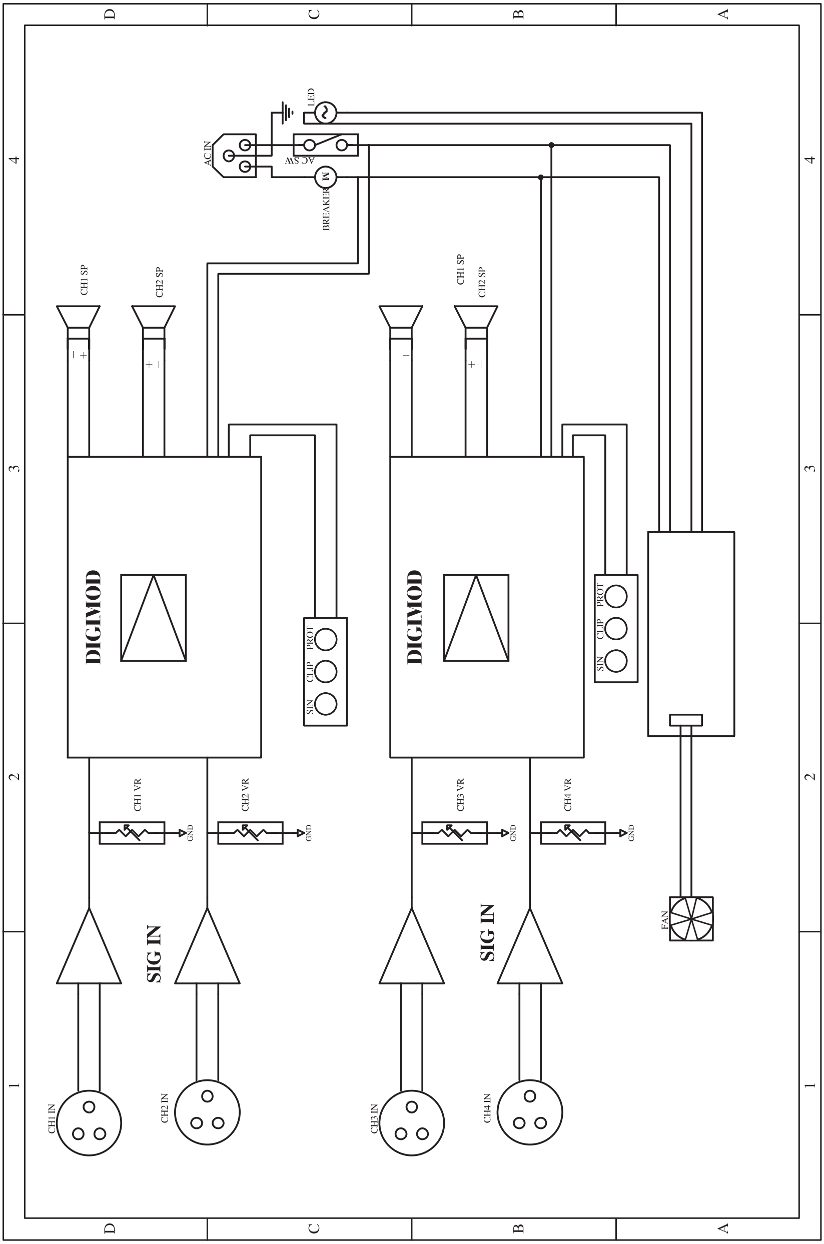


For D2/D4(4-CHANNEL)



Use either the binding post
or the speak-on

5. BLOCK DIAGRAM



6. TECHNICAL SPECIFICATIONS

POWER SPECIFICATIONS		D1	D2	D3	D4
		2 CH Amplifier	4 CH Amplifier	2 CH Amplifier	4 CH Amplifier
Power Continuous @0.5% THD . Both channels driven, 230V	4 Ohms	2 X 390 W	4 X 390 W	2 X 540 W	4 X 540 W
	8 Ohms	2 X 240 W	4 X 240 W	2 X 340 W	4 X 340 W
Power EIAJ@1% THD. Both channels driven, 230V	4 Ohms	2 X 500 W	4 X 500 W	2 X 750 W	4 X 750 W
	8 Ohms	2 X 270 W	4 X 270 W	2 X 370 W	4 X 370 W
Bridged Mode	8ohms	1 X 1000 W	2 X 1000 W	1 X 1500 W	2 X 1500 W
	16ohms	1 X 520 W	2 X 520 W	1 X 740 W	2 X 740 W
ELECTRICAL SPECIFICATIONS					
INPUT SENSITIVITY	1Vrms				
INPUT IMPEDANCE	10 kohms unbalanced, 20 kohms balanced				
FREQUENCY RESPONSE	20 Hz-20 kHz+/-0.1dB, -3 dB points: 10 Hz - 60kHz				
INPUT CLIPPING	10 Vrms (+22 dB)				
VOLTAGE GAIN	32dB				
DISTORTION(SMPTE-1M)	<0.5%				
S/N RATIO	>105dB				
GENERAL SPECIFICATIONS					
PROTECTIONS	On/off muting, DC-fault load grounding relay. Internal fault fuses				
CONTROLS	Front: AC switch, gain knobs Rear: low pass filter, mode selector				
INDICATORS	SIGNAL: green LED CLIP: red LED POWER: blue LED PROTECTION: red LED				
CONNECTORS	INPUT : balanced combo OUTPUT: "Touch-proof" binding posts and speak-on jacks.				
POWER SUPPLY	Available for AC230V,AC115V, 50-60Hz				
DIMENSIONS(WxDxH)		483x285x88.8 mm	483x376x88.8 mm	483x285x88.8 mm	483x376x88.8 mm
WEIGHT		5.5 Kg	7.9 Kg	5.5 Kg	7.9 Kg

6. WARRANTY

1. WARRANTY REGISTRATION CARD

To obtain Warranty Service, the buyer should first fill out and return the enclosed Warranty Registration Card within 10 days of the Purchase Date.
All the information presented in this Warranty Registration Card gives the manufacturer a better understanding of the sales status, so as to provide a more effective and efficient after-sales warranty service. Please fill out all the information carefully and genuinely, miswriting or absence of this card will void your warranty service.

2. RETURN NOTICE

2.1 In case of return for any warranty service, please make sure that the product is well packed in its original shipping carton, and it can protect your unit from any other extra damage.

2.2 Please provide a copy of your sales receipt or other proof of purchase with the returned machine, and give detail information about your return address and contact telephone number.

2.3 A brief description of the defect will be appreciated.

2.4 Please prepay all the costs involved in the return shipping, handling and insurance.

3. TERMS AND CONDITIONS

3.1 ▲LTO warrants that this product will be free from any defects in materials and/or workmanship for a period of 1 year from the purchase date if you have completed the Warranty Registration Card in time.

3.2 The warranty service is only available to the original consumer, who purchased this product directly from the retail dealer, and it can not be transferred.

3.3 During the warranty service, ▲LTO may repair or replace this product at its own option at no charge to you for parts or for labor in accordance with the right side of this limited warranty.

3.4 This warranty does not apply to the damages to this product that occurred as the following conditions:

- Instead of operating in accordance with the user's manual thoroughly, any abuse or misuse of this product.
- Normal tear and wear.
- The product has been altered or modified in any way.
- Damage which may have been caused either directly or indirectly by another product / force / etc.
- Abnormal service or repairing by anyone other than the qualified personnel or technician.

And in such cases, all the expenses will be charged to the buyer.

3.5 In no event shall ▲LTO be liable for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

3.6 This warranty gives you the specific rights, and these rights are compatible with the state laws, you may also have other statutory rights that may vary from state to state.

SEIKAKU TECHNICAL GROUP LIMITED
NO. 1, Lane 17, Sec. 2, Han Shi West Road, Taichung 40151, Taiwan
http://www.altoproaudio.com Tel: 886-4-22313737
email: alto@altoproaudio.com Fax: 886-4-22346757

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